

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



REC'D 17 JAN 2006

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Applicant's or agent's file reference JSPCT/168	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. <b>PCT/KR2004/002384</b>	International filing date(day/month/year) <b>17 SEPTEMBER 2004 (17.09.2004)</b>	Priority date (day/month/year) 26 SEPTEMBER 2003 (26.09.2003)	
International Patent Classification (IPC) or national classification and IPC <b>H01L 21/324(2006.01)i</b>			
Applicant <b>KORNIC SYSTEMS CORP. et al</b>			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_ containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
  - ☒ Box No. I Basis of the report
  - ☐ Box No. II Priority
  - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - ☐ Box No. IV Lack of unity of invention
  - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - ☐ Box No. VI Certain documents cited
  - ☐ Box No. VII Certain defects in the international application
  - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand <b>27 MAY 2005 (27.05.2005)</b>	Date of completion of this report 10 JANUARY 2006 (10.01.2006)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer KIM, Sung Hee Telephone No. 82-42-481-5728 

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/002384

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☒ This report is based on translations from the original language into the following language English, which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3 and 23.1(b))
    - ☒ publication of the international application (under Rule 12.4)
    - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
  
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
  - ☒ the international application as originally filed/furnished
  
  - ☐ the description:
    - pages \_\_\_\_\_ as originally filed/furnished
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  
  - ☐ the claims:
    - pages \_\_\_\_\_ as originally filed/furnished
    - pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  
  - ☐ the drawings:
    - pages \_\_\_\_\_ as originally filed/furnished
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  
  - ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
  
3. ☐ The amendments have resulted in the cancellation of:
  - ☐ the description, pages \_\_\_\_\_
  - ☐ the claims, Nos. \_\_\_\_\_
  - ☐ the drawings, sheets \_\_\_\_\_
  - ☐ the sequence listing (*specify*): \_\_\_\_\_
  - ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
  
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - ☐ the description, pages \_\_\_\_\_
  - ☐ the claims, Nos. \_\_\_\_\_
  - ☐ the drawings, sheets \_\_\_\_\_
  - ☐ the sequence listing (*specify*): \_\_\_\_\_
  - ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/002384

## Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-11	YES
	Claims		NO
Inventive step (IS)	Claims	1-11	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-11	YES
	Claims		NO

### 2. Citations and explanations (Rule 70.7)

(1) Reference is made to the following documents:

D1 : US 6,576,564 B2(Micron Technology, Inc.) 10 Jun. 2003

D2 : US 6,255,197 B1(Jim Mitzel, Walnut Creek) 3 Jul. 2001

D3 : US 5,464,499 A(Texas Instruments Inc.) 7 Nov. 1995

D4 : US 5,571,749 A(Canon Kabushiki Kaisha) 5 Nov. 1996

D1 discloses a plasma processing system. The system comprises a remote plasma activation region for formation of active gas species; a transparent transfer tube coupled between the remote activation region and a semiconductor processing chamber; and a source of photo energy for maintaining activation of the active species during transfer from the remote plasma activation region to the processing chamber.

D2 discloses a hydrogen annealing method. The processing method includes providing a first gas including a hydrogen atom into a first chamber; igniting a plasma within the first chamber to provide a source of hydrogen atoms; passing the plasma downstream through a cavity to a second chamber disposed separately from the first chamber; and heating an object disposed within the second chamber.

D3 discloses a multi-electrode plasma processing system. The system includes a gas showerhead assembly, a radio-frequency chuck and a screen electrode. The screen electrode includes a base for positioning within the process chamber. The screen has numerous passageways to allow interaction of plasma and the process chamber walls.

D4 discloses a method and apparatus for forming deposited film. The apparatus comprises a vacuum chamber for forming a semiconductor layer; a vacuum chamber for forming a semiconductor having i-type conductivity on the semiconductor layer; heating and cooling means.

(See Supplemental Box)

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.  
Continuation of:

(Box No. V)

**(2) Novelty and Inventive step**

The subject matter of Claims 1-11 is about a plasma rapid thermal process apparatus in which a supply port of radical source is improved. The plasma rapid thermal process apparatus according to the present invention comprises a chamber including a supply port having an inside and outside tube and an exhaust port, a heat source for heating wafer, a gas supply module, a discharge tube and a microwave supply apparatus.

Although D1-D4 disclose a plasma processing system including transfer means coupled between the remote plasma activation region and a semiconductor processing chamber, none of the documents D1-D4, taken alone or in combination, discloses a supply port having an inside and outside tube defined in the invention. Furthermore, in the documents D1-D4 there are no suggestion leading a person skilled in the art towards the invention defined by the Claims 1-11.

Therefore, compared with the prior arts D1-D4, the subject matter of Claims 1-11 is considered to involve novelty and an inventive step under PCT Article 33(2) and 33(3).

**(3) Industrial Applicability**

The present invention is believed to be industrially applicable according to PCT Article 33(4).